

Drill Collar Specifications

Mechanical properties per API 7-1

Ultimate tensile strength psi	Yield strength psi	Elongation ⁽¹⁾ %	Reduction of Area %	Impact strength ⁽²⁾ J	Hardness ⁽³⁾ HB
135,000 to 140,000	100,000 to 110,000	15 min	45 min	50 min	285 to 341

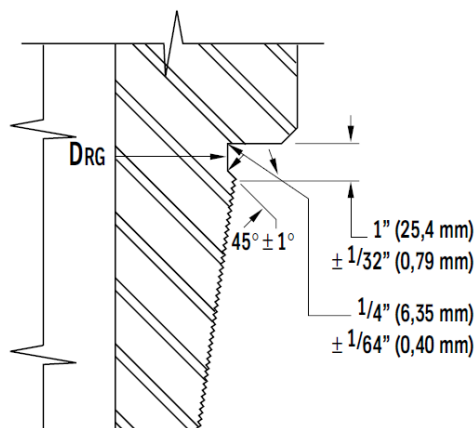
(1) $L = 4 D$

(2) ASTM A 370 Charpy - V)

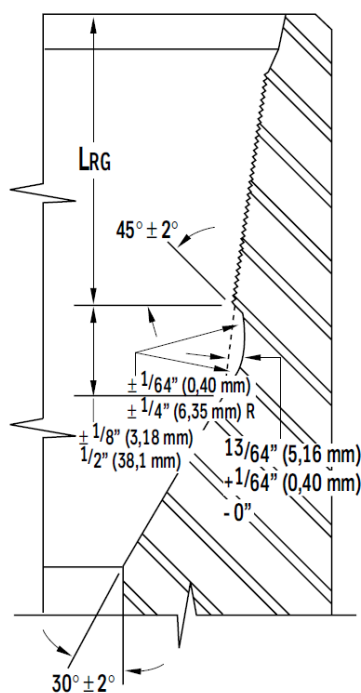
(3) one inch below surface

Connections

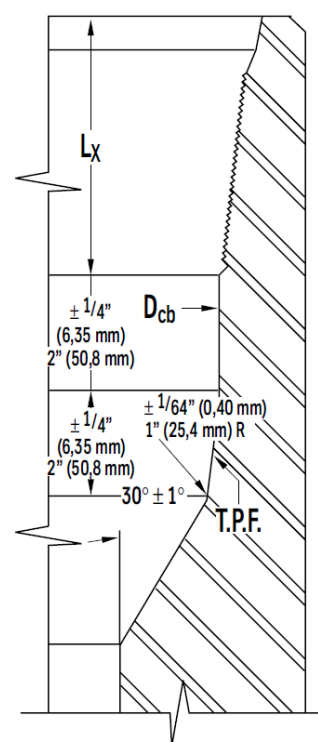
All connections are phosphated to help prevention of galling during initial make-up. API or customer specified thread compounds are applied before fitting the connections with pressed steel thread protectors.



Pin stress-relief feature



Box stress-relief groove



Boreback box stress-relief feature

Stress-relief features for drill collar connections

Number ⁽¹⁾ or Size and Style of Connection*	Length, Shoulder Face to Last Thread Scratch of Box Member, in. Tol. ± 1/16 in. L _x	Diameter of Cylinder Area of Box Member, in. Tol. + 1/64 – 0 in. D _{cb}	Taper of Area Behind Cylinder Area of Box Member, in. per ft. ± 1/4 in./ft. T.P.F.	Diameter of Pin Member at Groove, in. Tol. + 0 – 1/32 in. D _{rg}	Length, Shoulder Face to Groove of Box Member, in. Tol. + 0, – 1/8 in. L _{rg}
NC35	3 1/4	3 15/64	2	3 15/64	3 3/8
NC38 (3 1/2 IF)	3 1/2	3 15/32	2	3 33/64	3 5/8
NC40 (4 FH)	4	3 21/32	2	3 25/32	4 1/8
NC44	4	4	2	4 3/16	4 1/8
NC46 (4 IF)	4	4 13/64	2	4 21/64	4 1/8
NC50 (4 1/2 IF)	4	4 5/8	2	4 3/4	4 1/8
NC56	4 1/2	4 51/64	3	5 18/64	4 5/8
NC61	5	5 15/64	3	5 56/64	5 1/8
NC70	5 1/2	5 63/64	3	6 47/64	5 5/8
NC77	6	6 35/64	3	7 27/64	6 1/8
4 1/2 FH	3 1/2	3 51/64	3	4 13/64	3 5/8
5 1/2 REG	4 1/4	4 1/2	3	4 56/64	4 3/8
6 5/8 REG	4 1/2	5 8/32	2	5 27/64	4 5/8
7 5/8 REG	4 3/4	5 56/64	3	6 13/32	4 7/8
8 5/8 REG	4 7/8	6 25/32	3	7 18/64	5

(1) Connections NC23, NC26 (2 3/8 IF) and NC31 (2 7/8 IF) do not have sufficient metal to accommodate stress-relief features.

Slip and elevator grooves

Slip and elevator grooves are defined by API 7-1 standard

Grooves

Drill collar OD in.	Diameter of elevator groove in.	Diameter of slip groove in.	Cold worked radius in.
10	9 1/8	9 1/2	1/4
9 3/4	8 7/8	9 1/4	1/4
9 1/2	8 5/8	9	1/4
9 1/4	8 3/8	8 3/4	1/4
9	8 1/8	8 1/2	1/4
8 1/2	7 3/4	8	3/16
8	7 1/4	7 1/2	3/16
7 3/4	7	7 1/4	3/16
7 1/2	6 3/4	7	3/16
7 1/4	6 1/2	6 3/4	3/16
7	6 1/4	6 1/2	3/16
6 3/4	6	6 1/4	3/16
6 1/2	5 7/8	6	1/8
6 1/4	5 5/8	5 3/4	1/8
6	5 3/8	5 1/2	1/8
5 3/4	5 1/8	5 1/4	1/8
4 3/4	4 1/4	4 3/8	1/8
4 1/8	3 11/16	3 3/4	1/8

Typical sizes, bores and connections

OD in.	Bore		Connection style and size		Weight Standard bore kg		Weight reduction for ZIP kg
	Standard in.	Optional in.	Standard bore	Optional bore	Slick	Spiral	
3 1/8	1 1/4	1	NC 23	2 3/8" REG	333	n/a	n/a
3 1/2	1 1/2	1 1/4	NC 26 2 3/8" IF	NC 26 2 3/8" IF	428	n/a	n/a
4 1/8	2	1 3/4	NC 31 2 7/8" IF	NC 31 2 7/8" IF	490	457	-10
4 1/4	2	1 3/4	NC 31 2 7/8" IF	NC 31 2 7/8" IF	530	493	-11
4 1/2	2	1 3/4	NC 31 2 7/8" IF	NC 31 2 7/8" IF	614	572	-12
4 3/4	2 1/4	2	NC 35	NC 38 3 1/2" IF	703	654	-13
5	2 1/4	2	NC 38 3 1/2" IF	NC 38 3 1/2" IF	754	702	-14
5 1/4	2 1/4	2	NC 38 3 1/2" IF	NC 38 3 1/2" IF	852	793	-15
5 1/2	2 1/4	2	NC 38 3 1/2" IF	NC 38 3 1/2" IF	952	886	-16
5 3/4	2 1/4	2 13/16	NC 40 4" FH	4 1/2" FH	1 058	985	-21
6	2 1/4	2 13/16	NC 44	NC 40 4" FH	1 168	1 088	-22
6 1/4	2 1/4	2 13/16	NC 46 4" IF	NC 46 4" IF	1 280	1 192	-22
6 1/2	2 1/4	2 13/16	NC 46 4" IF	NC 50 4 1/2" IF	1 407	1 310	-25
6 3/4	2 1/4	2 13/16	NC 46 4" IF	NC 50 4 1/2" IF	1 535	1 429	-26
7	2 13/16	2 1/4	NC 50 4 1/2" IF	NC 50 4 1/2" IF	1 662	1 545	-27
7 1/4	2 13/16	3	NC 50 4 1/2" IF	5 1/2" FH	1 684	1 567	-30
7 1/2	2 13/16	3	NC 50 4 1/2" IF	5 1/2" REG	1 824	1 697	-31
7 3/4	2 13/16	3	NC 56 6 5/8" REG	NC 56 6 5/8" REG	1 967	1 830	-32
8	2 13/16	3	NC 56 6 5/8" REG	NC 56 6 5/8" REG	2 118	1 970	-34
8 1/4	2 13/16	3	6 5/8" REG	6 5/8" REG	2 268	2 110	-35
8 1/2	2 13/16	3	6 5/8" REG	6 5/8" REG	2 428	2 258	-36
8 3/4	2 13/16	3	6 5/8" REG	6 5/8" REG	2 591	2 421	-37
9	3	2 13/16	NC 61 7 5/8" REG	NC 61 7 5/8" REG	2 715	2 525	-38
9 1/4	3	2 13/16	NC 61 7 5/8" REG	NC 61 7 5/8" REG	2 888	2 699	-40
9 1/2	3	2 13/16	7 5/8" REG	7 5/8" REG	3 068	2 854	-40
9 3/4	3	2 13/16	NC 70 7 5/8" REG	NC 70 7 5/8" REG	3 252	3 026	-47
10	3	2 13/16	NC 70 7 5/8" REG	NC 70 7 5/8" REG	3 436	3 196	-48
11	3	2 13/16	NC 77 8 5/8" REG	NC 77 8 5/8" REG	4 227	3 933	-52
11 1/4	3	2 13/16	NC 77 8 5/8" REG	NC 77 8 5/8" REG	4 440	4 130	-54
12	3	2 13/16	NC 77 8 5/8" REG	NC 77 8 5/8" REG	5 078	4 745	-58
14	3	2 13/16	NC 77 8 5/8" REG	NC 77 8 5/8" REG	6 853	6 404	-58

Connection interchange list

Connection name	Size					
Numbered connection NC	26	31	38	40	46	50
Internal flush IF	2 3/8	2 7/8	3 1/2		4	4 1/2
Slim hole SH	2 7/8	3 1/2	4 1/2			
Full hole FH				4		
Extra hole XH					4 1/2	5